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AUTHOR Donley, Jan
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ABSTRACT

This study examined the differential effects of a course-based treatment (i.e., students' direct application of reading strategies to their own college texts) versus a content-based treatment (i.e., student application of reading strategies to texts provided in the reading class) on various measures of student achievement and psychological functioning related to academic learning. The study involved 47 college students at North Carolina State University and incorporated a quasi-experimental, two group, two observation (pretest/posttest) design. Students were taught and practiced using the PROR (Preread-Read-Organize-Review) textbook reading strategy. Overall, students from both the course- and content-based treatment groups reported positive attitudes towards the course and the PROR strategy, showed gains in their learning skills, and also indicated that they were using and would continue to use the PROR strategy for their textbook reading assignments. However, students in the course-based group were more likely to be using each component of PROR, and it was found that this group used the reading strategy more in other courses. Contains 28 references. (GLR)

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Effects of Instructional Context on Academic Performance and Self-Regulated Learning in Underprepared College Students

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Jan Donley
North Carolina State University

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Literature Review

In order to address the problems of academically underprepared students at the college level, many universities provide remedial reading programs to help students develop skills that are essential for academic success. While there is some positive research support for the effectiveness of such programs (Kulik, Kulik, & Shwalb, 1983; Landward & Hepworth, 1984), some researchers have argued that many of the programs in place are overly dependent on a curriculum not based upon current theory and research (Stahl, Simpson, & Brozo, 1988; Stahl, Brozo, & Simpson, 1987; Hunter, 1984; Dansereau, Collins, McDonald, Holley, Garland, Diekhoff, & Evans, 1979). This atheoretical curriculum typically involves students completing isolated "skill and drill" exercises using contrived materials that do not necessarily approximate texts that students use in their regular college courses. Upon a careful review of content analysis research related to the types of textbooks used in college reading instruction, Stahl et al. (1988) concluded that research evidence for most of the techniques advocated in textbooks was missing, that there was very little consensus across texts as to what constituted effective study methods, and that the types of activities suggested across texts seemed to have questionable transfer value to actual college reading and studying tasks. Similarly, Dansereau et al. (1979) have argued that many of the reading and learning skills improvement courses at the college level have not been developed on the basis of findings from psychological and educational research. These authors also contend that typically these programs have only been evaluated by comparing pre- and post-test scores on standardized reading tests or global dependent measures such as grade point average. Consequently, there is little evidence concerning the effectiveness of these programs.

Within the last five years, however, postsecondary reading programs have begun to reflect the changing emphasis away from the traditional skills approach to reading instruction towards a research-based approach involving instruction in reading and learning strategies (Swafford & Alvermann, 1989). Strategies which have proven successful at the secondary level and are grounded in current theoretical notions of the reading process are beginning to appear in descriptions of postsecondary reading programs. For example, student questioning, a practice that is based in both schema theory and conceptions of metacognition, appears to improve comprehension for college reading students (Mealey & Nist, 1989). Despite the increasing concern for utilizing research-based approaches to postsecondary reading programs, however, there have been few actual research efforts which have targeted postsecondary reading populations. In fact, in one review of the literature concerning postsecondary content reading strategies, only 14 of 82 supporting studies involved students taking postsecondary reading courses (Swafford & Alvermann, 1989). Additionally, most of the empirical studies that examined postsecondary reading strategies did not involve a training component, and only addressed the issue of what happened when a student was asked to use a particular strategy (Mealey & Nist, 1989).

In addition to their concern for a lack of theoretical and empirical support for postsecondary reading instruction, researchers and practitioners have been concerned with the student's ability to transfer skills acquired in reading and study skills courses. It has been noted that many students perform well in reading/study skills courses but often do not transfer the use of the strategies to their content courses (Poppino & Cohen, 1979). The reason for the lack of strategy transfer is unclear. It may be the result of the inability to apply a strategy to a different context from the one in which it was

learned. It may also be the result of failure to perceive the relevance of the use of the strategy. Garner (1990) argues that one reason why learners fail to use strategies is that they may possess attributions and self-concepts that do not support strategy use. For example, a learner who lacks self-esteem and who has the tendency to attribute success to external, uncontrollable factors would be unlikely to persist at or initiate strategic activity. It is probably safe to say that many students in postsecondary reading classes may possess low self-concepts and attributions or loci of control which would inhibit independent, self-regulated strategy use during reading tasks. Mealey (1990) argues that until underprepared college reading students are motivated to take responsibility for their learning and until they see themselves as learners and attribute their success to their own efforts they will have difficulties taking advantage of strategic learning instruction. Therefore, it is important to consider how strategy training programs may impact on these types of motivational variables in order to understand students' transfer of strategies to academic contexts outside of the reading class.

Mealey (1990) also claims that a *content-based*, strategic learning approach to college reading instruction will seem both relevant and practical for students and should result in students' transfer of strategy use to their other college courses. A content-based approach involves students acquiring learning strategies and applying them to authentic materials from various college content area texts. To further facilitate transfer, some researchers and practitioners are advocating the use of a *course-based* approach to college reading in which students actually apply the strategies they learn to their other course texts within the context of the reading class. Nist and Simpson (1987) describe a course-based college reading program in which students are taught strategies that promote active reading of college texts and efficient

preparation for exams using a direct instruction model to teach the strategies followed by several weeks of preparation for content area exams. Results of the program indicated that once students enrolled in regular courses, there were no significant differences between their grades and those of students who are regularly admitted. Although neither of these investigations examined why the programs may have been successful from a motivational standpoint, it may be that because the students were actually made to apply the reading and learning strategies to the other course materials, they were able to see that the strategies were useful to them. This in turn may have enhanced their sense of self-efficacy and empowered their sense of control over learning outcomes (Mealey, 1990).

Although college reading programs are beginning to emphasize current theoretical notions of effective reading comprehension instruction, there continues to be a lack of empirical research that attempts to identify how various approaches to instruction impact the underprepared student. In addition, there is a need for broader forms of evaluation of existing programs in order to more effectively and comprehensively elicit information that will guide program modification and improvement. In light of these concerns within the field of college reading instruction, the present study attempted to examine the differential effects of a course-based treatment (i.e., students' direct application of reading strategies to their own college texts) versus a content-based treatment (i.e., student application of reading strategies to authentic texts provided in the reading class) on various measures of student achievement and psychological functioning related to academic learning. Both of these treatments existed within the context of a reading and learning strategies course designed for underprepared students at the college level. The following research questions were addressed: 1) What are the effects of a

course-based treatment versus a content-based treatment on underprepared students' grade point averages?; 2) What are the effects of this training on students' reading comprehension performance on tests which assess both basic and higher-level comprehension processes?; 3) What are the effects of this training on students' reported use of learning strategies?; 4) What are the effects of this training on students' reported academic locus of control?; 5) What are the effects of this training on students' reported level of self-concept?; 6) What are the effects of this training on students' self reports of the perceived effectiveness of the strategies learned and their reported use of the strategies outside of the reading course?; and, 7) Do students continue to report that they use the strategies during the subsequent semester following the intervention?

Method

Subjects. The sample for this study consisted of 47 college students (44 freshmen and three sophomores) at North Carolina State University enrolled in a reading and learning strategies course which is required of students who score 360 or below on the verbal portion of the Scholastic Aptitude Test (SAT). The mean SAT verbal score for the course-based group was 342, while the mean score for the content-based group was 346; this difference was not statistically significant ($t = .698$, $p = .489$).

Design and Procedures. This study incorporated a quasi-experimental, two group, two observation (pretest/posttest) design. Due to scheduling conflicts, it was impossible to randomly assign students to treatment groups; therefore, intact classes were randomly assigned as either course-based or content-based. The measurement instruments used to assess the dependent

variables in a pretest-posttest format were: 1) the Degrees of Reading Power Test, Standard and Advanced forms; 2) the Learning and Study Strategies Inventory (LASSI) (Weinstein, 1987); 3) an adapted version of the Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky, & Crandall, 1972); and, 4) several subscales related to academic self-concept from the Self-Perception Profile for College Students (Harter, 1986). Students' self-reported evaluation and use of strategies acquired in the reading class was assessed qualitatively through the use of an end of the semester course evaluation that asks students both to rate the helpfulness of the strategies learned and describe how they use the strategies in their other courses. In addition, a telephone survey was conducted during the academic semester after the intervention as a delayed measure, which was aimed at determining whether students continued to use the strategies for reading in their courses after the intervention was no longer being provided.

Instruction and testing for both groups took place during the 1991 Spring semester. Instructors for the course were three graduate students (two doctoral students, and one masters) who had each already taught the course at least one time. There were five sections of the course offered during the semester; therefore, it was not possible to completely control for instructor effects by having each instructor teach both a course-based and a content-based instructional group. Two of the three instructors taught both a course-based and a content-based group, while one of the instructors taught a course-based group only.

Students were given the pretest measures during the first week of the 16-week semester. For the first six weeks of the course, students from both groups engaged in the same instructional activities which were typically taught in the course every semester (e.g., the learning process, time

management, vocabulary strategies, etc.). For the remainder of the semester, students were taught and practiced using the PROR (Preread-Read-Organize-Review) textbook reading strategy (Nist & Diehl, 1990). The prereading portion of the strategy encourages the use of techniques such as activating prior knowledge based on headings and subheadings in textbook chapters and developing questions based on these headings and subheadings. The reading component of PROR involves teaching students to annotate and underline important parts of a chapter in such a way that the annotations may be used for future review. The organize component of PROR is used after reading a chapter, and encourages students to manipulate the important parts of what they have read through techniques such as mapping and concept cards. The review portion of PROR involves a study plan in which student develop a procedure for preparing for and taking exams, and also the use of mnemonic techniques for exam review. Each week during the time in which students were learning PROR, the course-based treatment group applied elements of the PROR strategy to their own texts from other academic classes, while the content-based group applied the strategy to text chapters supplied by the instructor. Students were given the posttest measures during the final week of the semester.

Results and Discussion

Pretest-Posttest Dependent Variables. There were multiple dependent measures that were presumably related in the pretest-posttest design; therefore, data from pre- and posttests were first analyzed using a one-way multivariate analysis of covariance (MANCOVA) procedure. Since intact groups were used, all pretest measures were used as covariates. After the one-

way MANCOVA was run, univariate analyses were conducted to assess specifically the sources of significance.

Results from the overall Wilkes-Lambda statistic indicated that there was no statistically significant difference between treatment groups (F (19,16) = 0.439, p = 0.956). Results from the univariate analyses showed no significant differences between treatment groups on any of the pretest-posttest dependent measures (GPA, DRP - Standard/Advanced, Academic Locus of Control, Academic Self-Concept, LASSI). Means, adjusted means, and standard deviations can be found in Tables 1-5 in the Appendix of this paper.

Due to the lack of significant differences between treatment groups, the grouping variable was then removed, and data were analyzed using a t-test to determine any significant changes in performance from pretest to posttest. Results from this analysis must be interpreted with caution, because a control group without any intervention was not used, and therefore any gains made on the measures may have been due to developmental growth alone. Means and standard deviations for the pretest-posttest gains can be found in Tables 6 and 7 in the Appendix of this paper. The t-test results indicated that for the Degrees of Reading Power Tests, there were no significant gains for the Standard portion (t = 0.757, p = 0.453), but there were significant gains on the Advanced portion of the test (t = -6.58, p = 0.00). For the ten LASSI subscales, significant gains ($p < .05$) were found for eight of the ten subscales: Time Management, Anxiety, Concentration, Information Processing, Main Ideas, Support Techniques, Self-Testing, and Test Strategies. Significant gains were not found for the Motivation or Attitudes subscales. Results from the academic self-concept measure indicated that there were significant gains from pretest to posttest for global self-concept (t = -2.74, p = .009), scholastic competence (t = -2.54, p = 0.01), and intellectual ability (t = -3.75, p = 0.00). For the academic

locus of control measure, significant gains were found for internal-positive scores (belief in internal responsibility for successes), (t = -4.40, p = 0.00), internal-negative scores (belief in internal responsibility for failures), (t = -2.60, p = 0.01), and internal-total score (internal attribution of successes and failures), (t = -4.81, p = 0.00). Finally, a significant gain from fall to spring was found for semester grade point average, (t = -4.88, p = 0.00).

Course Evaluation Measures. At the end of the semester, students completed two course evaluation measures designed to assess their attitudes concerning the course overall, and their reported use of and specific attitudes towards the PROR textbook reading strategy. Results from the overall course evaluation showed that while students initially had negative attitudes towards being required to take the course (81% of the course-based and 50% of the content-based group), most of the students indicated that their attitude towards the course had changed positively (88% of the course-based and 50% of the content-based group). In addition, a majority of the students in both groups reported that the course had been helpful to them as a student (94% of the course-based and 85% of the content-based group).

A second course evaluation asked students to evaluate the components (Preread - Read - Organize - Review) of the PROR textbook reading strategy. One question asked students to indicate the number of times they had used the components of PROR in their other courses outside the reading course. For each component of PROR, the course-based group reported that they had used the strategy in their other courses more often than did the content-based group. Results from an ANOVA procedure indicated that the difference was marginally significant for the reading portion (annotating and underlining) of PROR, F (1,49) = 3.04, p = .08, only. Students from both groups also reported that they were using all components or PROR to prepare for final exams;

however, the greatest percentage of students from both groups were using the organizational strategies such as mapping and concept cards (90% of course-based and 83% of content-based group) in preparation for final exams. The majority of students from both groups also reported that all components of the PROR strategy were useful to them as students, and that they would use PROR for their textbook reading the following semester.

Overall, students from both the course-based and content-based treatment groups reported positive attitudes towards the course and the PROR strategy, and also indicated that they were using and would continue to use the PROR strategy for their textbook reading assignments. However, students in the course-based group were somewhat more likely to be using each component of PROR, and one significant difference favoring the course-based group was found for the number of times the strategy had been used in other courses for the reading portion of PROR.

Delayed Telephone Survey. In order to determine whether students who had taken the college reading course were continuing to use the PROR textbook reading strategy during the semester following the intervention, a brief telephone survey was conducted. Students were asked whether they were using the PROR strategy as they studied for their courses that semester. A majority of students from both treatment groups (82% of the course-based treatment and 87% of the content-based treatment) indicated that they were using the PROR strategy for studying purposes. Students from the course-based group reported using the strategy somewhat more frequently than the content-based group: 29% of the course-based group reported that they had used the strategy more than ten times for studying, while none of the content-based group reported using the strategy more than ten times. Students were also asked whether they were using the PROR strategy in its entirety, or

whether they were only using particular components of the strategy. Interestingly, most students from both treatment groups indicated that they were only using components of PROR, and were not using the entire system. There did not seem to be a consistent pattern in terms of which components of the strategy students were most often selecting to use; the various components of PROR (preread-read-organize-review) were mentioned equally often. Students seem to have selected the pattern of strategies which worked best for them as students.

Discussion. The lack of significant treatment group differences across most of the dependent measures may be due to several factors. First, the small sample size (N = 30 in the course-based, and N = 17 in the content-based group) may have accounted for the lack of significant results. However, there really was no trend in the means to suggest this possibility; the means across the two groups were quite similar. Another factor may have been the small amount of time during the intervention when the students were receiving differential treatment group instruction. Students in both groups were taught and applied the PROR strategy across a six week time period only, and students in both groups were actually only practicing the strategy once a week with either their actual course materials (course-based) or materials provided by the instructor (content-based).

A third factor may have been that there was simply not enough difference between the types of intervention that the two groups received. The difference between the use of actual course materials to practice the textbook reading strategy versus the use of authentic college textbook materials may not have been great enough to impact on the outcomes of the study. The original hypothesis was that students who used their actual course materials to learn to apply a textbook reading strategy would benefit more

than those using instructor-provided materials because having successful experiences with their own texts would enhance their sense of self-efficacy and contribute to a feeling of empowerment over learning outcomes (rather than helplessness resulting from failure). These successful experiences with text would also lead to self-regulated textbook reading strategy use by students, and would subsequently result in transfer to other academic reading tasks. Students applying the strategy to instructor-provided, authentic materials may become successful at using the strategy within the college reading course, but may fail to transfer strategy use to other academic settings because they have not directly seen the benefits of strategy use to their own academic reading tasks.

Based on the results of this study, however, it may not have necessary for students to use their own course materials in order to derive academic benefits from the textbook reading strategy instruction. The model of instruction for the PROR strategy may have accounted for the lack of variation between treatment groups as well. Instructors of both groups used an explicit model of instruction to teach the PROR strategy, in which teachers begin by modeling how they use the strategy, provide guided practice as students learn to use the strategy, and then eventually release responsibility to the students as they operate independently with the strategy (Pearson & Gallagher, 1983). This instructional model has been shown to promote self-regulated learning and effective instructional outcomes (Corno & Mandinach, 1983). Results from the pretest-posttest gains analysis suggested that both groups made gains on most of the measures used for the study, and although no true conclusions can be drawn from this analysis, the consistency of positive outcomes may suggest that all students benefited from this type of instruction. In addition, the course evaluation and the delayed telephone results suggest that students from

both treatment groups were using the PROR textbook reading strategy for their academic reading both during the semester of the intervention and the semester following the intervention. The fact that the delayed measure indicated that students were only using components of the PROR strategy may suggest that they experienced a "renegotiating" with the strategy once they left the instructional context. In other words, once students left the instructional context and had to use the strategy in an independent context, they renegotiated their use of the strategy to fit their personal style of what was most effective for them as readers and learners. This renegotiating of strategy use to fit personal style is a characteristic of self-regulated learning behavior (Corno & Mandinach, 1983). Future research efforts should examine other aspects of the instructional context which may promote self-regulated strategic reading behavior for underprepared college students.

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Table 1
Means, Adjusted Means, and Standard Deviations for Grade Point Average

	Grade Point Average	
	Mean	SD
Course-based (N = 30)	2.46 (2.46)	0.69
Content-based (N = 17)	2.47 (2.47))	0.56

*Note: Adjusted means are shown in parentheses.

Table 2
Means, Adjusted Means, and Standard Deviations for the Degrees of Reading Power Test

	DRP Standard		DRP Advanced	
	Mean	SD	Mean	SD
Course-based (N = 30)	60.33 (61.00)	7.08	17.53 (17.91)	3.79
Content-based (N = 17)	62.53 (61.62)	6.51	17.77 (17.48)	4.07

*Note: Adjusted means are shown in parentheses. The total possible number of points for the DRP-Standard was 70, while the total number possible for the DRP-Advanced was 24.

Table 3
Means, Adjusted Means, and Standard Deviations for the Learning and Study Strategies Inventory (LASSI)

Subscale	Course-Based		Content-Based	
	Mean	SD	Mean	SD
Attitudes	33.31 (33.55)	4.89	34.29 (33.69)	4.00
Motivation	32.41 (32.30)	4.61	32.47 (32.45)	4.35
Time Management	25.97 (26.10)	6.36	27.53 (27.06)	5.63
Anxiety	26.97 (26.81)	6.20	26.35 (26.40)	7.03
Concentration	28.31 (28.61)	5.56	28.71 (27.89)	5.78
Information Processing	29.97 (29.80)	6.12	29.29 (28.93)	6.66
Main Ideas	19.93 (20.05)	3.21	20.71 (20.34)	2.97
Support Techniques	28.52 (28.46)	5.90	27.94 (27.60)	5.92
Self-Testing	30.14 (30.04)	4.71	30.10 (29.75)	7.01
Test Strategies	30.86 (31.02)	4.75	31.65 (30.97)	5.71

Note: Adjusted means are in parentheses. The total number of possible points for all of the subscales except Main Ideas is 40; the maximum number of possible points for Main Ideas is 25.

Table 4
Means, Adjusted Means, and Standard Deviations for Locus of Control

Subscale	Course-Based		Content-Based	
	Mean	SD	Mean	SD
Internal-Positive	14.63 (14.86)	1.79	14.65 (14.31)	2.26
Internal-Negative	13.67 (13.90)	1.56	14.12 (13.69)	2.47
Total Internal Locus of Control	28.30 (28.76)	2.81	28.82 (28.05)	4.31

Note: Adjusted means are in parentheses. The total number of possible points for the Internal-Positive and Internal-Negative subscales is 17, and the total number of possible points for the Total Internal Locus of Control is 34.

Table 5
Means, Adjusted Means, and Standard Deviations for Self-Concept

Subscale	Course-Based		Content-Based	
	Mean	SD	Mean	SD
Global	20.07 (19.98)	3.11	18.25 (18.35)	3.94
Scholastic Competence	10.73 (10.74)	2.39	11.63 (11.59)	2.25
Intellectual Ability	12.73 (12.87)	2.38	13.00 (12.85)	2.31

Note: Adjusted means are in parentheses. The total number of possible points for global self-concept is 24, and the total number of possible points for Scholastic Competence and Intellectual Ability is 16.

Table 6: Pretest and Posttest Means and Standard Deviations for GPA, Degrees of Reading Power, and LASSI Dependent Measures

	Pretest		Posttest	
Dependent Measure	Mean	SD	Mean	SD
GPA	2.17	0.79	2.59	0.69
DRP-Standard	61.94	4.44	61.32	6.87
DRP-Advanced	13.60	3.90	17.62	3.85
LASSI-Attitudes	32.91	4.33	33.67	4.56
LASSI-Motivation	31.74	4.75	32.44	4.47
LASSI-Time Mgmt.	24.41	7.15	26.54	6.08
LASSI-Anxiety	22.39	6.52	26.74	6.44
LASSI-Concentration	25.15	6.62	28.46	5.58
LASSI-Info. Processing	26.50	5.90	29.72	6.26
LASSI-Main Ideas	17.67	4.55	20.22	3.11
LASSI-Support Tech.	25.52	6.13	28.30	5.85
LASSI-Self-Testing	27.33	6.23	30.20	5.60
LASSI-Test Strategies	28.39	5.23	31.15	5.10

Note: The total number of possible points for the DRP-Standard is 70 and the total number of possible points for the DRP-Advanced is 24. The total number of possible points for all LASSI subscales except Main Ideas is 40; the total possible number of points for the Main Idea subscale is 25.

Table 7: Pretest and Posttest Means and Standard Deviations for Academic Self-Concept and Academic Locus of Control

	Pretest		Posttest	
Dependent Measure	Mean	SD	Mean	SD
Self-Concept: Global	18.30	3.26	19.44	3.49
Self-Concept: Scholast. Competence	10.26	2.2	11.04	2.36
Self-Concept: Intell. Ability	11.78	2.59	12.83	2.33
Locus of Control: Internal-Positive	13.55	2.30	14.64	1.95
Locus of Control: Internal-Negative	13.09	2.17	13.83	1.93
Locus of Control: Internal-Total	26.64	3.49	28.49	3.39

Note: The total number of possible points for the Self-Concept-Global scale is 24, and for Scholastic Competence and Intellectual Ability is 16. The total number of possible points for the Locus of Control-Internal-Positive and Internal-Negative subscales is 17, and for the Locus of Control-Internal Total is 34.